MUNICIPAL ENGINEERING

INDEX

JULY — DECEMBER, 1913

VOLUME XLV

ENGINEERING PUBLISHING COMPANY
INDIANAPOLIS, IND.
NEW YORK, N. Y. CHICAGO, ILL.

Tech of Carn Poly of Tech

628.05
V.45

INDEX
MUNICIPAL ENGINEERING

VOL. XLV. JULY — DECEMBER, 1913.

Capital Letters, E., Q., W., etc., Indicate Department Under Which Articles are Classified.

Abrasion Test, Standards For Loss of Paving Brick in. Q..... 46
Alkali on Cement, Action of..... 58
Appraisement, Not Notice of Purchase. L.377
Appreciation of Land Values in Valuation of Public Utilities.....533
Asphalt, How to Test. Q.....143
Asphaltic Concrete in Racine, by P. H. Connolly. M. 279
Asphaltic or Bituminous Concrete Pavements. W. 50
Asphalt Plant, Detroit's Municipal, by H. B. Pullar 435
Asphalt Plant of St. Louis, Mo., Municipal 324
Asphalt Plants Fail, Why Some Municipal, by H. B. Pullar.....231
Asphalt Repair Plant at St. Paul, Minn., Municipal 63
Asphalts and Bituminous Road Binders, Fixed Carbon Not a Proper Test For. W. 242
Assessment Improvements, Payment of Costs of Proceedings in Special. G.....141
Automobile Fire Apparatus, Care of, by D. J. McCue.....471
Automobile, Knox, Fire Apparatus..... 76

Bascule Bridge in the World, The Largest 151
Billiard Rooms, Ordinance Governing. Q.140
Bitulithic For New York State Highways. M. 302
Bituminous Concrete Pavements, Asphaltic or. W. 50
Bituminous Mixing Plant, Semi-Portable. M. 580
Bituminous Pavements, Resurfacing, by Capt. Brook, U. S. A. M.....300
Bituminous Road Binders, Fixed Carbon Not a Proper Test For Asphalts and. W. 242
Blow Off Pipe for Wooden Water Main...535
Blue Printing Machinery. M..... 88
Blue Prints, Make Your Own. W..... 243
Bond Issues for State Highway Construction 534
Brick From Furnace Slag, Manufacture of Paving 359
Brick Paving Industry, Development in. E. 347
Brick, Paving, in Abrasion Test, Standards for Loss of. Q..... 46
Brick Road the Cheapest and Most Economical, The. 60
Brick, Wire-Cut-Lug. Q. 241
Bridge Construction, Rapid Concrete. W. 46
Bridge in the World, The Largest Bascule 151
Bridge, Lake Park, Milwaukee, Wis., by O. B. Young, Jr..... 53
Bridge, Marble Rock, Iowa, Park.....486
Bridges of Milwaukee, Lift, by Henry G. Tyrrell 2
Bridge, Specifications for Wood Paving for. Q. 143
Bridge, the Capitol Avenue, by L. V. Sheridan 268
"Bubble Font" That is Safe and Saving, A. M. 88

Calendar of Technical and Trade Society Meetings 275
Carbon Not a Proper Test for Asphalts and Bituminous Road Binders, Fixed. W. 242
Cement, Action of Alkali On..... 58
Cement Sampler. Q. 449
Charter of Dayton, Ohio, The New Home Rule 270
Chicago Subways 542
Chimney Construction, Concrete 498
Chimney Construction, Coniform. M.....400
Chimney Withstood Severe Wind Strain, by Roy F. Wilcox. M.....181
City As a Business Proposition, The. E..238
City Engineer's Office, Records for the. Q. 148, 239
City Forces, Piece Work System Applied to, by J. E. Tupper.....113
City, Franchise Contract Interpreted for the. E. 137
City Governments, We Get What We Deserve. E. 136
City Hall, New, For San Francisco, Design for 59
City Hall of San Francisco, The New, by Bakewell & Brown.....419
City Manager Plan of Municipal Government, The 556
City Planning Conference, St. Paul.....274
Civic Center for Boise, Idaho.....414
Civil Service Examinations.....84, 276, 479
Cleaning Capital Streets, by J. W. Paxton 259
Cleaning Costs, Comparative Street. W..451
Cleaning Department of Baltimore, Md., Street, by Stuart Stevens Scott.....340
Cleaning in Memphis, Methods of Street. M. 572
Cleaning in St. Paul, Minn., Paving Construction, Maintenance and 456
Cleaning Sewers Clogged by Floods, by J. A. Holzberger. M. 186
Cleaning Water Pipes. Q. 348
Cleaning Water Pipes 541
Clean, Keep the Street. W. 147
Clearance Between Car Tracks. E.....238
Coal by Heat Units, Purchasing. M.....288
Cobblestone Pavements, Tarred Stone Coating for Old, by A. Grimshaw.....159
Commission Government for Cities. E...533
Commission Government, Twelve Years of, by E. S. Bradford.....502
Compensation — Eminent Domain—Damaging Property by Public Improvements. L. 377
Concrete Bins of Norfolk Sand and Gravel Plant 56
Concrete Bridge Construction, Rapid. W. 47
Concrete Chimney Construction.....498
Concrete Construction in Dalton, Ga., Water Works 266
Concrete, Cracks in 54
Concrete Curb and Gutter, Proper Construction of Street With. Q.....350
Concrete Curb and Gutter, Slag for, by Chas. L. Mersh.....364
Concrete Dam, Patent on..... 59
Concrete Mixer, Laying Westrumite Pavements With a Chicago.....483

Concrete, Mixing of, by Creosoted Wood Block Paving Co.....480
Concrete Pavement Construction, by Morse-Warren Engineering Co. 88
Concrete Pavement Construction, Expansion and Contraction in, by C. G. Allen. M. 277
Concrete Pavement Costs. W. 243
Concrete Pavement for Country Roads, Narrow 258
Concrete Pavements. E. 41
Concrete Pavements at Connersville, Ind., and DeKalb, Ill. M. 186
Concrete Pavements in St. Johns, Michigan, Reinforced, by E. G. Hulse.....488
Concrete Pavements, Methods Which Have Developed Successful 152
Concrete Pipe Test, by W. R. Harris. W.146
Concrete Reservoirs, Waterproofing. Q..348
Concrete Road Organization, by G. F. Haskell 359
Concrete Roads 408
Concrete Where Work is Suspended, Protect the. W. 245
Construction and Maintenance, Petrolithic Road Construction with Costs of.....246
Contracting, Motor Trucks in Municipal, by H. W. Perry 311, 122
Contracting News..50, 200, 308, 408, 502, 586
Conventions, The Current. E. 346
Correction, A—A Roller and Scarifier Combined 564
Corrosion of Pipes by Raw and Treated Water, by Frank E. Hale.....334
Cost of Hauling With Road Roller, by R. G. Griffith 458
Cost of Re-cut Granite Block Pavement. W. 452
Cost of Recutting and Laying Granite Block Paving 539
Costs of Steam Shovel Excavation, Unit..429
Cost of Various Kinds of Pavement. Q...448
Costs, Comparative Street Cleaning. W..451
Council, How to Fill Vacancy in Town. Q. 348
Court Decisions 377
Cracks in Concrete 54
Creosoted Wood Block Pavement in Duluth, by John Wilson.....481
Creosoted Wood Block Pavement in Longview, Texas, by P. E. Green.....363
Creosoted Wood Block Pavements in Boston, by James H. Sullivan.....256
Crossings, Clearance for Overhead. Q....142
Crump Now Back on the Job, Mayor.....476
Cup, Sanitary Drinking. W. 358
Curb and Gutter Forms, Use of Steel. M. 86
Curb and Gutter, Slag for Concrete, by Chas. L. Marsh.....364

Damaging Property by Public Improvement—Compensation. L. 377
Dam, Concrete, Patent on..... 59
Decoloration at Grand Rapids, Mich., Water Softening and, by Walter A. Sperry 343
Disposal Plant of Infirmary and Children's Home of Green County, Ohio, Institutional, by Elliott Kimberly.....365
Drainage Districts in Cities 535
Drainage Water in City Sewer. Q.....352
Dump, New Kelly Power.....494

Efficiency in Municipal Societies, Increased. E. 440
Efficiency Society, The.....274
Efficiency Survey of Los Angeles, Results of an. W. 149
Electrical Equipment Unharmed by Flood, by Wm. L. Fawcett. M. 392
Electricity, Municipal Profits From Gas and 264
Electric Light and Power Plant, Marceline, Mo. M. 96
Electric Light for Cleveland, Ohio, Municipal 262
Electric Light Franchise, Form of. Q....143
Electric Light Rates in Large Cities, Gas and. W. 49
Electroliers Mark Location of Fire Boxes.164
Embankments, Proper Construction of Road, by George C. Warren.....424
Eminent Domain. L. 377
Engineers, Highway, Prospective Opportunities for, in a National Highways Department 64
Engine, Oil, Service Tests of. W. 48
European Road Building, by Clarence A. Kenyon 106
Excavation, Unit Costs on Steam Shovel.429

Fiber From Vegetable Tissue, How to Separate the. Q. 239
Filtered Water Supplies, Southern Cities With 535
Filtering Beds for the Purification of Sewage, Suggestions for Improvements on Bacterial. W. 353, 539
Filtration Plant at McKeesport, Pa., by E. C. Trax..... 14
Fire and Police Alarm Systems of Ft. Worth, by W. R. Bideker.....130
Fire Apparatus as an Investment, Motor Driven, by J. E. Shrewsbury.....475
Fire Apparatus, Care of Automobile, by D. J. McCue 471
Fire Apparatus, Care of Motor, by F. H. Bemis 379
Fire Apparatus, Care of Motor Driven, by J. M. Taylor 314
Fire Apparatus Costs, Comparative, by F. L. Stetson. M.....578
Fire Apparatus in British Use, Type of Motor Fire, by Thomas Reece.....438
Fire Apparatus in Manchester (N. H.), Motor, by Charles F. Bowen. M.....398
Fire Apparatus, Knox Automobile..... 76
Fire Apparatus, Maintenance of Motor Driven, by O. B. Mercer.....472
Fire Apparatus, Motor, by H. W. Perry..206
Fire Apparatus, Motor Driven.....378-379
Fire Boxes, Electroliers Mark Location of 164
Fire Department Grounds, Maintenance of, by W. E. Bideker.....367
Fire Engineers, International Association of 381
Fire Engine Test, Auto.....373
Fire Engine Test, Robinson, by David M. Hudson 373
Fire Insurance Patrols, Motor, by E. T. Shepherd 165
Fire Protection. E. 237
Fire Protection for Government Records..164
Fire Trucks, Tires for. M. 397
Flood Protection Reports 549
Flood, The Ohio Valley.....550
Franchise Construed in Favor of Public. L. 377
Franchise Contract Interpreted for the City. E. 137
Franchise, Form of Electric Light. Q....143
Franchises and Municipal Home Rule.....556
Freezing, Prevention of Meter. M. 395
Fuller, George W.....388
Furniture Installation, Metallic.....110

Garbage and Refuse Collection in Schenectady, N. Y., Free.....366
Garbage and Refuse, Facts About Collection of 366
Garbage and Waste Disposal, Mixed Method, by E. B. Stuart.....255
Garbage Disposal in Chicago. E. 441
Garbage Disposal Methods, Sewage and. Q. 43
Garbage, Motor Trucks for Removal of..260
Garbage on the Premises, The Destruction of, by Francis A. Herring. M.....402
Garbage on Premises, Destruction of, by B. C. Allen 562
Garbage Reduction at Columbus, Ohio, Results of 321
Gas and Electricity, Municipal Profits From 264
Gas and Electric Light Rates in Large Cities. W. 49
Gasoline Diaphragm Pump, Economy of Pumping With. W. 48

Gas Plant at Duluth, Minn., Municipal...264
Gas Rates in Large Cities 376
Gaynor, William J. 387
Goss, Dean, Is Chicago Smoke Prevention Engineer 151
Government, Efficient. E. 237
Government for Cities, Commission. E...533
Grading and Graveling Streets, by C. C. King. M. 182
Grafting, Reward for Evidence of.....558
Granite Block Pavement, Cost of Re-cut. W. 452
Granite Block Paving, Cost of Recutting and Laying 539
Granite Block Streets in Schenectady, Re-cut 364
Gravel and Sand, Public Well and Water Supplies from 70
Graveling Streets, Grading and, by C. C. King, M. 182
Gutter Forms, Use of Steel Curb and. M. 86
Gutter, Slag for Concrete Curb and, by Chas. L. Marsh 364

Harbor Improvements, Contracts for Chicago 559
Hauling With Road Roller, Cost of, by R. G. Griffith 458
Health Association, American Public....273
Heat, Waste, Utilized by British Municipality 81
Highway Construction, Bond Issue for State 534
Highway Engineers in a National Highways Department, Prospective Opportunities for, by Charles Henry Davis... 64
Highway Improvements, California, by Roy M. Horton 361
Highways, Better Surfaces for Main.....258
Highways in Allegheny County, Pennsylvania, Development and Maintenance of, by John S. Gillespie.....453
Home Rule, Franchise and Municipal.....556
Hydrants in Gravity Water Supplies, Rates for Fire. Q. 446

Incinerating Plants Producing Power. Q.448
Inspectors Needed in Chicago, Better....354
Intersection, Form of Pavement Surface at Street. Q. 446

Jail, A Modern City. M. 277

Kinkaid, Ill., The Latest Town Made to Order 558
Kissel Kars in Water Works Departments 561

Leaks in Water Mains, Locating.....329
Liability for Injuries—Streets. L. 377
Liable for Sewer Constructed Under Void Contract but Afterwards Utilized Legally, Municipality 377
Library on Municipal Engineering.....535
Licenses in Minnesota, Exemptions from Peddlers 458
Light and Water Plant at Fremont, Neb., Municipal, by H. J. Bremers, Jr.....119
Light, Electric, and Power Plant, Marceline, Mo. M. 96
Light for Cleveland, Ohio, Municipal Electric 262
Light Franchise, Form of Electric. Q...143
Lighting, Philadelphia Specifications for Alley and Suburban 374
Lighting Plant at Seattle, Wash., The Municipal, by J. D. Ross.....464
Lighting Plant, Mansfield, Mass., by George W. Wood.....265
Lighting, Progress in Public.....467
Lighting With Tungsten Lamps, Street...523
Light, Rates for Berkeley, Cal., Electric..538
Light Rates in Large Cities, Gas and Electric. W. 49
Limestone, Development of Water Supply from. Q. 444
Loaders for Handling Sand, Stone and Gravel, Wagon. M. 188
Loading Machine, A Portable. M. 294

Macadam Road Construction Statistics, by John McNeal, C. E.....253
Macadam Street With Concrete Curb and Gutter, Proper Construction of. Q.....350
Maintenance and Cleaning in St. Paul, Minn., Paving Construction, by J. H. Beck 456
Maintenance of Highways in Allegheny County, Pennsylvania, Development and by John S. Gillespie.....453
Maintenance of Motor Driven Fire Apparatus, by O. B. Mercer.....472
Maintenance, Petrolithic Road Construction With Costs of Construction and, by K. F. Postle.....246
Main, Wooden Water Supply. Q.....141
Meterage System, Advantages of, by A. J. O'Keefe 161
Meter Freezing, Prevention of. M.....395
Meter Protection, Importance of, by Clarence E. Titus. M.....175
Meters as Handled by the Water Meter Department, Water, by Otto F. Poetsch, Inspector of Meters 369
Meters, Location and Setting of Water...280
Meters. Proper Housing of, by Harry Ruthauff 194
Meters, Pumpage Reduced One-half by, by F. B. Wheeler. M. 390
Mitchell, Business Manager, River Forest, Ill., Karl M. 82
Mixer, A Cement Grout, by A. M. Anderson. M. 174
Mixer, Adaptability of Small, by J. H. Powers. M. 302
Mixer, Economical Use of Small. M.....574
Mixer, Laying Westrumite Pavements With a Chicago Concrete.....483
Mixer, The Standard Traction Paving, by L. A. Devore. M. 94
Mixer, Use of Small. M. 396
Mixer, Utility Street Paving. M.....183
Mixing of Concrete, by Creosoted Wood Block Paving Co. 490
Mixing Plant, Semi-Portable Bituminous. M. 580
Mix, Securing the Proper, by Ritchie Brothers. M. 286
Motor Combinations, Advantage of, by Thomas E. Heath. M. 296
Motor Company Injunction Dissolved, International. M. 574
Motorcycles, Police 169
Motorcycles Used by the Wisconsin Anti-Tuberculosis Association, by Otto F. Bradley 167
Motor Driven Combination, The, by A. P. McDavit 474
Motor Driven Fire Apparatus.....378-379
Motor Driven Fire Apparatus as an Investment, by J. E. Shrewsbury.....475
Motor Driven Fire Apparatus, Care of, by J. M. Taylor 314
Motor Driven Fire Apparatus, Maintenance of, by O. B. Mercer.....472
Motor Driven Police Patrols. M.....576
Motor Driven Street Sweeper Used in Oakland, Cal. 167
Motor Fire Apparatus, by H. W. Perry...206
Motor Fire Apparatus, Care of, by F. H. Bemis, St. Paul, Minn.....379
Motor Fire Apparatus in British Use, Type of, by Thomas Reece.....438
Motor Fire Apparatus in Manchester (N. H.), by Charles F. Bowen. M.....398
Motor Fire Insurance Patrols, by E. T. Shepherd 165
Motorized Hauling Service, by Wellington Walker 128
Motor, Maintenance of Tractor.....383
Motor Police Patrol, The, by Edward C. Haller. M. 178
Motor Road Sweeper of English Design. A. 387
Motors and Horses Made by Milwaukee Official Comparison of Cost of. M.....288

Motors Reduce Cost. M. 391
Motor Truck for Venezuela, Big....170
Motor Truck Hauling in Catskill Aqueduct Tunnel, New York, Cost of. M....565
Motor Trucks for Removal of Garbage..260
Motor Trucks in Municipal Contracting, by H. W. Perry 31, 122
Motor Trucks in Street Paving Work. M.281
Municipal and Corporation Street Railways, Transfers Between San Francisco's. Q. 44
Municipal Asphalt Plant, Detroit's, by H. B. Pullar 435
Municipal Asphalt Plant of St. Louis, Mo.324
Municipal Asphalt Plants Fail, Why Some, by H. B. Pullar....231
Municipal Asphalt Repair Plant at St. Paul, Minn. 63
Municipal Auditorium Wreck at Long Beach, California 81
Municipal Bidding on Paving Contracts, Los Angeles Alderman Proposes, by Councilman Charles McKenzie.... 7
Municipal Electric Light for Cleveland, Ohio 262
Municipal Engineering, Library on....535
Municipal Gas Plant at Duluth, Minn....264
Municipal Improvements, American Society of 387, 477
Municipal League, The International....274
Municipal Light and Water Plant at Fremont, Neb., by H. J. Bremers, Jr....119
Municipal Lighting Plant at Seattle, Wash., by J. D. Ross....464
Municipal Ownership of Public Utilities, Results of. Q. 43
Municipal Profits From Gas and Electricity 264
Municipal Slaughter House at Grand Forks, N. Dak., by H. G. Lykken....332
Municipal Societies, Increased Efficiency in. E. 440

Numbering Lots in Plats, Methods of. Q. 46

Oil Engine, Service Test of. W.... 48
Oiling Streets, Machinery for. Q....449
Ordinance, City, Segregation of Races by. Q. 43
Ordinance Governing Billiard Rooms. Q.140
Ordinance, Procedure in Passing. Q....349
Ordinance Regulating Weighmaster. Q..138
Ordinances, Negro Segregation. W....451
Ordinances, Smoke Abatement. W....450
Overhead Crossings, Clearance for. Q....142
Ownership of Sewer System, Private. Q..143
Oxy-Acetylene Gas, Repairs With.... 52

Park, How to Lay Out a Small City....445
Parkway, St. Louis, Plans a Central Traffic 77
Patent Decision, Septic Tank. Q....139
Patents on Springfield Sewage Disposal Details 541
Pavement Construction, Concrete, by Morse-Warren Engineering Co.... 88
Pavement Construction, Expansion and Contraction in Concrete, by C. G. Allen. M. 277
Pavement, Cost of Re-cut Granite Block. W. 452
Pavement, Cost of Various Kinds of....448
Pavement Costs, Concrete. W. 243
Pavement Doubly Reinforced 481
Pavement in Duluth, Creosoted Wood Block, by John Wilson....481
Pavement in Longview, Texas, Creosoted Wood Block, by P. E. Green....363
Pavement Methods and Costs, by H. N. Ruttan 546
Pavement of Buena Vista Avenue, Highland Park, Mich., by Carl T. Jerome...484
Pavements at Connersville, Ind., and DeKalb, Ill., Concrete. M. 186
Pavements, Concrete. E. 41
Pavements, Concrete, Asphaltic or Bituminous. W. 50
Pavements in Boston, Creosoted Wood Block, by James H. Sullivan....256
Pavements in Chicago, Wood Block. W.. 51
Pavements in St. Johns, Michigan, Reinforced Concrete, by E. G. Hulse....488
Pavements in Springfield, Mass., and New Haven, Conn., Creosoted Wood Block..543
Pavements, Methods Which Have Developed Successful Concrete 152
Pavements, Resurfacing Bituminous, by Capt. Brook, U. S. A. M....300
Pavements, Resurfacing Old. M....104
Pavement Surface at Street Intersection, Form of. Q. 446
Pavements With a Chicago Concrete Mixer, Laying Westrumite 483
Paving Brick From Furnace Slag, Manufacture of 359
Paving Brick Manufacturers' Association, National 274
Paving Construction Maintenance and Cleaning in St. Paul, Minn., by J. H. Beck 456
Paving, Cost of Recutting and Laying Granite Block 539
Paving for Bridge, Specifications for Wood. Q. 143
Paving in Toledo, Ohio, Street....251
Paving Mixer, The Standard Traction, by L. A. Devore. M. 94
Paving Plan, St. Paul's. W....245
Paving Work, Motor Trucks in Street. M.281
Personal Notes 82, 171, 276, 479, 559
Piece Work System Applied to City Forces, by J. E. Tupper....113
Pipe Laying, Specifications for Elevated Tanks and Standpipes and for. Q....442
Pipes by Raw and Treated Waters, Corrosion of, by Frank E. Hale....334
Pipes, Cleaning Water. Q. 348
Pipe Sewers in Chicago, Construction of Tile, by Herbert Edson Hudson.... 20
Pipe Sewers Near Chicago, Tile, by Herbert E. Hudson. M. 285
Pipe Test, Concrete, by W. R. Harris. W. 146
Pipe Tests, Vitrified Sewer....488
Police Alarm Systems of Ft. Worth, Fire and, by W. R. Bideker 130
Police Patrols, Motor Driven. M....576
Police Patrol, The Motor, by Edward C. Haller. M. 178
Power Plant, Electric Light and, Marceline, Mo. M. 96
Publications Received....172, 276, 388, 480
Public Service Corporation Regulation, A Problem in. E. 41
Public Utilities, Appreciation of Land Values in Valuation of....533
Public Utilities, Results of Municipal Ownership of. Q. 43
Pumpage Reduced One-half by Meters, by F. B. Wheeler. M. 390
Pumping Equipment of Municipal Water Purification Plant, Grand Rapids, Mich. Q. 240
Pumping With Gasoline Diaphragm Pump, Economy of. W. 48
Pump, The Economical Suction Lift for a.537
Pump, The Seagrave, by H. K. Black. M. 92
Purchasing System, Cincinnati's 217
Purchasing System was Established, How the New York, By F. X. A. Purcell....429
Purification at Atlanta, Ga., Sewage....224
Purification, Sewage at Madison, S. D. W.145
Purification, Sewage or Water. Q....139

Rates for Berkeley, Cal., Electric Light..538
Rates for Fre Hydrants in Gravity Water Supplies. Q. 446
Rates in Kentucky, Water. Q....142
Rates in Large Cities, Gas....49, 376
Records for the City Engineer's Office. Q. 239
Records in a City Engineer's Office. W..148
Refuse Collection in Schenectady, N. Y., Free Garbage and 366
Refuse Disposal Methods as Adapted to Chicago 528

Refuse, Facts About Collection of Garbage and 366
Refuse, Recoverable Values of Municipal, by George H. Norton 550
Refuse, Street, Underground Receptacles for. Q. 43
Regulation, A Problem in Public Service Corporation. E. 41
Reinforced Concrete Pavements in St. Johns, Michigan, by E. G. Hulse....488
Report of Investigation of Chicago Bureau of Streets 557
Reservoirs, Waterproofing Concrete. Q..348
Resurfacing Bituminous Pavements, by Captain Brook, U. S. A. M....300
Resurfacing Old Pavements. M. 104
Reward for Evidence of Grafting....558
Rich, Edward D. 276
Road Builders' Convention, American....548
Road Building, European, by Clarence A. Kenyon 106
Road Building Funds, by Edward N. Hines. M. 180
Road Building Funds by Proper Design and Repair, Conservation of 269
Road Congress at Detroit, American 114, 273, 478
Road Construction for Heavy Travel. Q.350
Road Construction Statistics, Macadam, by John McNeal, C. E....253
Road Construction With Costs of Construction and Maintenance, Petrolithic, by K. F. Postle 246
Road Embankments, Proper Construction of, by George C. Warren 424
Road Materials, Cost and Value of....223
Road Organization, Concrete, by G. F. Haskell 359
Road Roller, Cost of Hauling With, by R. G. Griffith 458
Roads, Concrete 408
Roads in Indiana, Concrete 547
Roads, Narrow Concrete Pavement for Country 258
Road Surfaces, Traffic Suitable for Various 418
Roads, West Virginia Needs Good....423
Road, the Chevy Chase Experimental....511
Road Work in Texas 547
Roller and Scarifier Combined. M. 85
Roller and Scarifier Combined—A Correction 564
Roots Removed From Sewers 339
Sampler, Cement. Q. 449

Sand, Public Well and Water Supplies from Gravel and 70
Sanitary Significance of the More Common Constituents of Water, by George A. Johnson 66
Scarifier Combined, A Roller and. M.... 85
Segregation of Races by City Ordinance. Q. 43
Segregation Ordinances, Negro. W....451
Selection of Combination Equipment, by J. M. Donahue. M. 394
Septic Tank Patent Decision. Q....139
Sewage and Garbage Disposal Methods. Q. 43
Sewage Disposal Details, Patents on Springfield 541
Sewage Disposal for Pasadena, Cal....549
Sewage Disposal Plant at Springfield, Mo. 459
Sewage Disposal Plant, New, Of Atlanta, Ga. 520
Sewage or Water Purification. Q. 139
Sewage Purification at Atlanta, Ga....224
Sewage Purification at Madison, S. D. W.145
Sewage, Suggestions for Improvements on Bacterial Filtering Beds for the Purification of. W. 353, 539
Sewerage and Water Supply Plans, New Jersey Requirements for 355
Sewer Constructed Under Void Contract but Afterwards Utilized Legally, Municipality Liable for. L....377
Sewer, Drainage Water in City. Q. 352
Sewer Pipe Tests, Vitrified....488
Sewer Plan Commission, The New York..159
Sewers Clogged by Floods, Cleaning, by J. A. Holzberger. M. 186
Sewers, Elm Roots Clogged. M....580
Sewers in Chicago, Construction of Tile Pipe, by Herbert Edson Hudson.... 20
Sewers, Los Angeles Needs Storm. W...245
Sewers Near Chicago, Tile Pipe, by Herbert E. Hudson. M. 285
Sewers, Roots Removed From....339
Sewers, Vitrified Sectional. Q. 241
Sewer System, Private Ownership of. Q.143
Sidewalk Forms, Steel vs. Wooden, by Charles Allison. M. 179
Sidewalks in Chicago, Removal of Projections Over. W. 358
Sidewalks, Laying Cement, by P. W. Fowler 196
Slag for Concrete Curb and Gutter, by Chas. L. Marsh 364
Slag, Manufacture of Paving Brick From Furnace 359
Slaughter House of Grand Forks, N. Dak., Municipal, by H. G. Lykken 332
Smoke Abatement Ordinances. W....456
Smoke Nuisance, Fighting the, by Harry McNutt 130
Smoke Prevention Engineer, Dean Goss is Chicago 151
Snow by Street Railways, Removal of. Q.142
Societies, Increased Efficiency in Municipal. E. 440
Softening and Decoloration at Grand Rapids, Mich., Water, by Walter A. Sperry.343
Southern Cities With Filtered Water Supplies 535
Specifications for Alley and Suburban Lighting, Philadelphia 374
Specifications for Elevated Tanks, and Standpipes and for Pipe Laying. Q....442
Specifications for Wood Paving for Bridge. Q. 143
Specifications, Standard. Q. 241
Squeegee in Berlin, The. M. 173
Standpipes and for Pipe Laying, Specifications for Elevated Tanks, and. Q...442
Sterilization by Ultra-Violet Rays, Water, by James A. Seager 415
Street Cleaning Costs, Comparative. W.451
Street Cleaning Department of Baltimore, Md., by Stuart Stevens Scott....340
Street Cleaning in Memphis, Methods of. M. 572
Street Clean, Keep the. W. 147
Street Lighting With Tungsten Lamps...523
Street Paving in El Paso, Tex....564
Street Railways, Removal of Snow by. Q. 142
Street Railways, Transfers Between San Francisco's Municipal and Corporation. Q. 44
Street Reconstruction and Repair. L....377
Street Refuse, Underground Receptacles For. Q. 43
Streets, Cleaning Capital, by J. W. Paxton 259
Streets, Grading and Graveling, by C. C. King. M. 182
Streets in Schenectady, N. Y., Recut Granite Block 364
Streets—Liability for Injuries. L....377
Streets, Machinery for Oiling. Q....449
Streets, Report of Investigation of Chicago Bureau of 557
Suction Lift for a Pump, The Economical.537
Subways ,Chicago 542
Sweeper of English Design, A Motor Road 387
Sweeper Used in Oakland, Cal., Motor Driven Street 167

Tamper Attachments, Staley. M.... 90
Tamper, Use of Small Power, by H. L. Strange 563
Tamping, Mechanical Trench, by W. F. Darling. M. 292
Tank, Elevated Steel Water, by Charles W. Root, M. 98
Tanks and Standpipes and for Pipe Laying, Specifications for Elevated. Q....442

Tarred Stone Coating for Old Cobblestone Pavements, by A. Grimshaw.....159
Taxation, Houston's Plan of, by J. J. Pastoriza 235
Technical Associations ..83, 171, 381, 478, 560
Technical Schools 84, 171, 275, 480, 559
Test Asphalt, How to. Q. 143
Test, Auto Fire Engine 373
Test, Concrete Pipe, by W. R. Harris. W.146
Test for Asphalts and Bituminous Road Binders, Fixed Carbon Not a Proper. W. 242
Test, Robinson Fire Engine, by David M. Hudson 373
Tests, Vitrified Sewer Pipe 488
Tire Legislation Demanded, Wide..... 68
Tires for Fire Trucks. M. 397
Tires, Heavy Truck. M. 176
Tire, The Pneumatic, by Chas. E. Swingley. M. 282
Track Elevation in Indianapolis..... 52
Tracks, Clearance Between Car. E.....238
Traction Hauling Costs. M.....570
Traction Hauling on Gatchellville Road, York County, Pa., Economy of, by John F. Hammond. M. 302
Tractor and Horses, Comparative Operating Cost of Seagrave, by L. A. Quayle.385
Trade Notes. M.....104, 406, 498, 584
Trade Publications. M..60, 198, 406, 500, 582
Transfers Between San Francisco's Municipal and Corporation Street Railways. Q. 44
Trench Filling, Mechanical, by G. M. Gest 494
Trench Tamping, Mechanical, by W. F. Darling. M. 292
Trucks in Municipal Contracting, Motor, by H. W. Perry 122
Tungsten Lamps, Street Lighting With...523
Tussock Moth, High Pressure Streams Used in War Against 164

Vacancy in Town Council, How to Fill. Q. 348
Valuation of Public Utilities, Appreciation of Land Values 533
Viaduct, Nelson Street, Atlanta, Ga. W..144
Vitrified Sectional Sewers. Q.....241
Vitrified Sewer Pipe Tests 488

Waste Disposal, Mixed Method of Garbage and, by E. B. Stuart 255
Waste Heat Utilized by British Municipality 81
Water Consumption, Classification of, by Otto F. Poetsch. M. 283
Water Main, Blow Off Pipe for Wooden..535
Water Mains, Locating Leaks in.....329
Water Meters as Handled by the Water Meter Department, by O. F. Poetsch, Superintendent of Meters.....369
Water Pipes, Cleaning. Q. 348
Water Pipes, Cleaning 541
Water Plant at Fremont, Neb., Municipal Light and, by H. J. Bremers, Jr...119
Waterproofing Concrete Reservoirs. Q...348
Water Purification Plant, Grand Rapids, Mich., Pumping Equipment of Municipal. Q. 240
Water Purification, Sewage or. Q. 139
Water Rates in Kentucky. Q. 142
Water, Sanitary Significance of the More Common Constituents of, by George A. Johnson 66
Waters, Corrosion of Pipes by Raw and Treated, by Frank E. Hale.....334
Water Softening and Decoloration at Grand Rapids, Mich., by Walter A. Sperry 343
Water Sterilization by Ultra-Violet Rays, by James A. Seager 415
Water Supplies from Gravel and Sand, Public Well 70
Water Supplies, Rates for Fire Hydrants in Gravity. Q. 446
Water Supplies, Southern Cities With Filtered 535
Water Supply and Storage Works, City of La Crosse, Wis., Construction Features of 554
Waters, New Process for Purifying Drinking, by Dr. Robert Grimshaw.....553
Water Supply from Limestone, Development of. Q. 444
Water Supply Main, Wooden. Q.....141
Water Supply of Louisville, Ky.....515
Water Supply Plans, New Jersey Requirements, Sewerage and. W.....355
Water Tank, Elevated Steel, by Charles W. Root. M. 98
Water Works, Concrete Construction in Dalton, Ga 266
Water Works Department, Kissel Kars in.561
Water Works for Marceline, Mo., by L. A. Nickell 160
Weighmaster, Ordinance Regulating. Q..138
Well and Water Supplies from Gravel and Land, Public 70
Wells, Yield of Limestone and Sandstone. 36
Westrumite Pavements With a Chicago Concrete Mixer 483
White Way in Memphis, Tenn., New. M..565
Wind Strain, Chimney Withstood Severe, by Roy F. Wilcox. M. 181
Wood Block in Cincinnati, Creosoted, by H. M. Waite 157
Wood Block Pavement in Duluth, Creosoted, by John Wilson 481
Wood Block Pavement in Longview, Texas, Creosoted, by P. E. Green.....363
Wood Block Pavements in Boston, Creosoted, by James H. Sullivan.....256
Wood Block Pavements in Chicago. W... 51
Wood Block Pavements in Springfield, Mass., and New Haven, Conn., Creosoted 543
Wooden Water Supply Main. Q.....141
Wood Paving for Bridge, Specification for. Q. 143